

REMARKS

Reconsideration and allowance of the present patent application based on the foregoing amendments and following remarks are respectfully requested.

By this Amendment, claims 1, 3, 8 and 23 are amended and claims 9, 10 and 24 are cancelled without prejudice or disclaimer to the subject matter therein. Support for the amendments to the claims may be found, for example, in the embodiments described from page 10, line 20 to page 11, line 7 and at page 18, line 25 of the specification, and in FIG. 4. No new matter has been added. After entry of this Amendment, claims 1, 3, 8 and 23 will remain pending in the present patent application.

Claims 1, 3, 8-10 and 23-24 were rejected under 35 U.S.C. §103(a) based on Baker (U.S. Pat. No. 6,373,647) in view of Tanaka (U.S. Pat. No. 5,486,967). The rejection is respectfully traversed.

Claims 9, 10 and 24 are cancelled without prejudice or disclaimer, thus rendering moot the rejection of these claims.

As conceded by the Office Action, Baker does not disclose, teach or suggest a perpendicular magnetic medium. However, Applicants respectfully submit that there are additional features that are absent in Baker.

For example, Baker fails to disclose, teach or suggest a disk drive comprising, *inter alia*, a preamplifier circuit including a read amplifier constructed and arranged to amplify a read signal output from the read head, and an adjusting circuit constructed and arranged to adjust a frequency of the signal output from the read amplifier, so as to reproduce a read signal waveform of rectangular waveform read by the read head, the adjusting circuit including a programmable filter configured to set a low cut-off frequency in accordance with the recording frequency of the disk medium and to remove frequencies in the amplified signal lower than the cut-off frequency.

Baker discloses a sampling data detection channel 100 that includes a pre-amplifier 110, a variable gain amplifier 120, an analogue filter/equalizer 130 and a programmable FIR 140. (See FIG. 2).

However, unlike claim 1, Baker does not disclose, teach or suggest a programmable filter configured to set a low cut-off frequency in accordance with the recording frequency of the disk medium and to remove frequencies in the amplified signal lower than the cut-off frequency. Baker merely discloses that the equalizer circuit 130 is a low pass filter that removes high frequency noise. For example, Baker states: "analogue filter/equalizer circuit

130 is programmed as a low pass filter with a cut off frequency ranging from approximately 500 KHz to approximately 2MHz.” (See Baker at col. 5, lines 47-49). Therefore, in Baker, frequencies higher than the high cut-off frequency of the low pass filter are removed and frequencies lower than the high cut-off frequencies of the low pass filter are passed. By contrast, in the invention of claim 1, frequencies lower than the low cut-off frequency are removed by the adjusting circuit. (See FIG. 6 of the present application). It is also noted that filter 140, referred to by the Office Action, is not a low pass filter. Instead, filter 140 is merely an equalizer that equalizes the signal waveform in which the noise is eliminated. (See Baker at col. 5, lines 49-65).

In addition, unlike claim 1, Baker is silent as to setting a frequency in accordance with the recording frequency of the disk medium, much less setting a low cut-off frequency. For example, in Baker, the high cut-off frequency of the low pass filter is not set in accordance with the recording frequency of the disk medium.

Tanaka fails to remedy the deficiencies of Baker. Tanaka merely discloses a magnetic disk memory system including a magnetic disk, a recording/reproducing head, a recording amplifier, a reproduction pre-amplifier, a differential circuit, a detection circuit and a pre-coder (See FIG. 50). However, Tanaka is silent as to the above mentioned features of claim 1. As such, any reasonable combination of Baker and Tanaka cannot result, in any way, in the invention of claim 1.

Furthermore, Applicants respectfully submit that there is no motivation or suggestion to modify the teachings of Baker in order to provide the features of claim 1. As mentioned previously, Baker does not disclose, teach or suggest adjusting a low cut-off frequency and removing frequencies lower than the cut-off frequency. Instead, Baker merely discloses removing frequencies higher than the cut-off frequency of a low pass filter. As such, by virtue of teaching that all frequencies lower than a cut-off frequency should be passed and all frequencies higher than the cut-off frequency should be removed, Baker implicitly teaches away from the features of claim 1. (See MPEP 2145).

Claims 3 and 23 are patentable over Baker, Tanaka and a combination thereof at least by virtue of their dependencies from claim 1 and for the additional features recited therein.

For example, with respect to claim 3, the Office Action alleged that “one of ordinary skilled in the art would have been motivated to have adjusted the low cut-off frequency to 50KHz or less or in the range of from 1/2000 or less of the maximum recording frequency of the disk medium in order to optimize the data signal.” Applicants respectfully disagree. As mentioned previously, neither Baker nor Tanaka disclose adjusting a low cut-off frequency

and removing frequencies lower than the cut-off frequency. Instead, Baker merely discloses removing frequencies higher than the cut-off frequency of a low pass filter. Specifically, Baker discloses removing frequencies higher than 500 KHz-2MHz, *i.e.* frequencies in the high frequency band. Therefore, in Baker and unlike claim 3, frequencies lower than 50 KHz are passed by the low pass filter. Accordingly, based on these teachings, Applicants respectfully submit that there is no motivation to modify Baker or Tanaka to provide the features of claim 3.

Applicants point out that the low cut-off frequency of the read amplifier increases as the recording density. Accordingly, if the low cut-off frequency is applied to a disk drive using a perpendicular magnetic recording system, the read signal waveform read from the disk medium through the read head shows distorted components. In order to suppress the distorted components of the waveform, the read amplifier should have a low cut-off frequency lower than 1/2000 of the minimum recording frequency.

Claim 8 is patentable over Baker, Tanaka and a combination thereof for at least similar reasons as provided above for claim 3 and for the additional features recited therein. Specifically, it is respectfully submitted that neither Baker nor Tanaka disclose, teach or suggest a preamplifier device comprising a read amplifier constructed and arranged to amplify a read signal output from the read head, the read amplifier having the characteristic of a low cut-off frequency in the range of from 1/2000 or less of the maximum recording frequency of the disk medium to a DC level. As such, any reasonable combination of Baker and Tanaka cannot result, in any way, in the invention of claim 8.

Furthermore, for at least similar reasons as provided above in connection with claims 1, 3 and 23, Applicants respectfully submit that there is no motivation to modify Baker and/or Tanaka to provide the features of claim 8.

Accordingly, reconsideration and withdrawal of the rejection of claims 1, 3, 8-10 and 23-24 under 35 U.S.C. §103(a) based on Baker in view of Tanaka are respectfully requested.

The rejection having been addressed, Applicants request issuance of a notice of allowance indicating the allowability of all pending claims.

If anything further is necessary to place the application in condition for allowance, Applicants request that the Examiner contact Applicants' undersigned representative at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

*lair*  
CHRISTOPHE F. LAIR  
Reg. No. 54248  
Tel. No. (703) 770-7797  
Fax No. (703) 770-7901

ERH/CFL/smm  
P.O. Box 10500  
McLean, VA 22102  
(703) 770-7900